

TABLE 4.—Mean altitudes and temperatures of significant points identifiable as tropopause during July 1939, classified according to the potential temperatures (10-degree intervals between 290° and 409° A.) with which they are identified (based on radiosonde observations)

Potential temperatures	Atlanta, Ga.			Bismarck, N. Dak.			Charleston, S. C.			Denver, Colo.			El Paso, Tex.			Joliet, Ill.			Miami, Fla.		
	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature
290-299																					
300-309																					
310-319																					
320-329																					
330-339	1	11.0	-48.0	6	9.7	-44.0				6	10.9	-46.5				2	9.1	-37.5			
340-349	17	12.1	-53.1	16	11.1	-50.5				10	12.0	-52.5				11	10.2	-41.2	2	12.0	-59.0
350-359	18	13.4	-60.4	13	12.1	-54.3	7	12.0	-51.1	8	13.4	-60.0	10	12.8	-58.6	20	11.7	-50.7	7	12.0	-51.4
360-369	18	14.8	-66.5	5	11.2	-59.8	11	13.6	-62.0	7	14.6	-65.0	14	13.9	-63.6	13	13.4	-59.5	21	13.5	-60.5
370-379	5	15.5	-69.0	8	14.9	-63.6	9	15.7	-70.3	7	13.0	-65.7	5	15.8	-72.4	6	13.8	-58.2	6	14.6	-65.2
380-389	13	16.1	-69.4	4	15.4	-64.2	3	16.0	-69.0	3	15.6	-65.0	4	16.5	-73.2	6	15.5	-64.3	9	15.6	-68.0
390-399	4	16.6	-70.8	5	16.0	-65.0	4	17.1	-72.0				2	17.0	-72.5	3	15.9	-63.0	6	16.9	-69.0
400-409	3	17.3	-69.0							2	17.0	-68.0	3	17.4	-70.7	3	17.0	-66.3	5	17.4	-71.2
Weighted means		14.3	-62.9		12.8	-56.5		14.5	-62.3		13.2	-58.9		14.7	-66.6		12.9	-54.6		14.5	-63.3
Mean potential temperature (weighted) ¹		364.7			353.7			364.9			358.4			378.5			357.2			367.1	

Potential temperature	Nashville, Tenn.			Oakland, Calif.			Oklahoma City, Okla.			Omaha, Nebr.			Sault Ste. Marie Mich.			Washington, D. C.		
	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature	Number of cases	Mean altitude (km.) m. s. l.	Mean temperature
290-299																		
300-309																		
310-319																		
320-329																		
330-339	2	10.4	-47.5										2	8.6	-44.5			
340-349	4	10.8	-44.8	10	10.5	-43.7	9	10.9	-46.0	3	11.0	-47.8	12	9.6	-44.1			
350-359	18	11.4	-47.3	25	11.5	-48.6	17	12.1	-52.3	22	12.2	-54.0	24	11.1	-52.4	7	10.2	-42.1
360-369	23	13.1	-57.1	10	13.2	-56.9	17	13.4	-60.3	13	13.4	-60.2	17	12.2	-55.5	11	12.3	-55.7
370-379	16	14.5	-65.3	14	14.4	-63.4	12	14.9	-67.8	17	14.3	-63.1	10	13.1	-59.4	5	13.4	-61.4
380-389	11	15.4	-63.5	10	15.0	-64.0	9	15.5	-68.8	11	15.1	-65.3	6	14.1	-63.3	4	13.3	-54.5
390-399	6	15.8	-66.2	9	15.7	-65.1	6	16.1	-69.0	10	16.0	-66.8	12	14.4	-61.3	2	14.0	-52.5
400-409	5	16.6	-68.6	5	16.2	-66.2	5	16.6	-68.4	9	16.3	-65.4	12	15.6	-63.0			
	3	17.1	-68.3	5	16.8	-65.0	1	17.7	-74.0	3	16.7	-65.0	2	16.2	-64.5	1	16.6	-63.0
Weighted means		13.7	-58.9		13.4	-56.7		14.4	-63.4		13.9	-60.2		12.3	-55.1		12.6	-54.2
Mean potential temperature (weighted) ¹		360.8			361.7			365.1			363.8			349.9			353.2	

¹ Applies to tables for previous months also.

RIVERS AND FLOODS

[River and Flood Division, MERRILL BERNARD, in charge]

By BENNETT SWENSON

The precipitation during the month of October 1939 was decidedly deficient over much of the country and the majority of the rivers were unusually low at the close of the month.

No floods were reported with the exception of one in the lower Rio Grande on October 12-14. This flood resulted from heavy rains on the 10th to 11th which were centered principally over the tributaries which enter the lower Rio Grande from the Mexican side.

These rains resulted in a sharp increase of the stages in the river from Rio Grande City, Tex., downstream. Flood stages were exceeded slightly at a few points including Rio Grande City and Mercedes, Tex., where crest

stages of 21.6 and 21.4 feet, respectively, were reached. However, very little water overflowed on the American side of the river, and no appreciable damages resulted.

Table of flood stages, October 1939

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
<i>West Gulf Drainage</i>					
Rio Grande:	<i>Feet</i>			<i>Feet</i>	
Rio Grande City, Tex.....	21	12	13	21.6	12
Mercedes, Tex.....	21	13	14	21.4	14